



“Techno-economics of Home Gigabit Networks. Home Gigabit Networks, Demand and TE studies”

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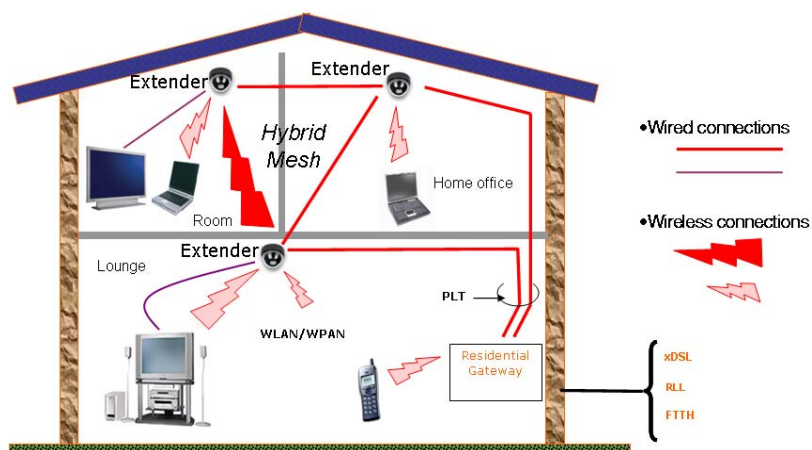
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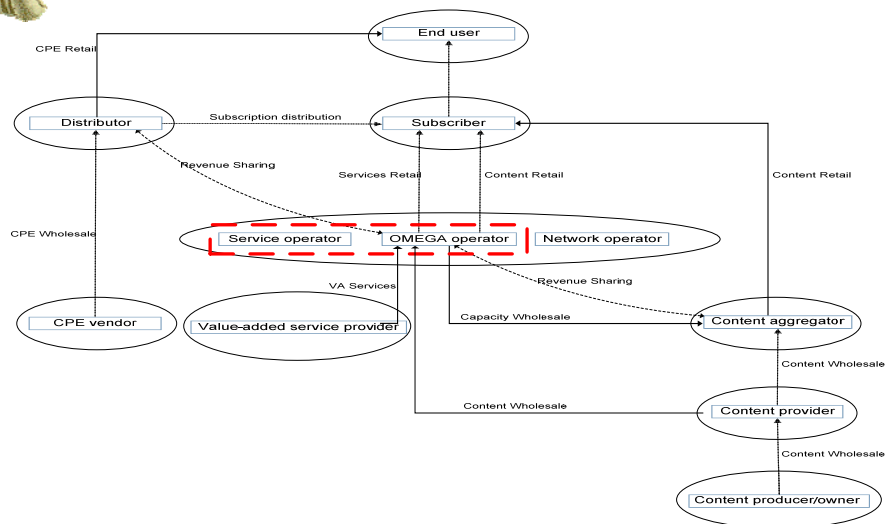
The Omega Home Network





Omega Business Case (1)

- OMEGA operator is also a service provider (next slide).
- Reaches customers through business deals with a network operator and with content providers.
- Provided services include fixed voice services, broadband internet, VoIP, digital TV and Video on Demand (VoD).



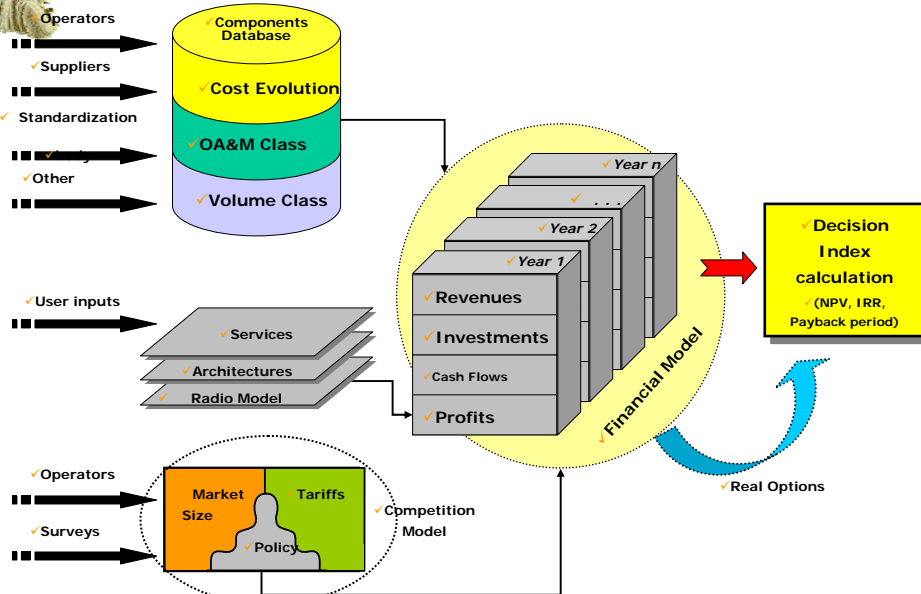


Omega Business Case (2)

- 4 service packets: Platinum, Gold, Silver, Bronze.
 - Prices are chosen to be slightly less than current market prices.
- Revenue sharing with
 - Network operator (80% for the access network).
 - Content provider (60% from movies).
 - Shares reflect current market practices.



Techno-economic model





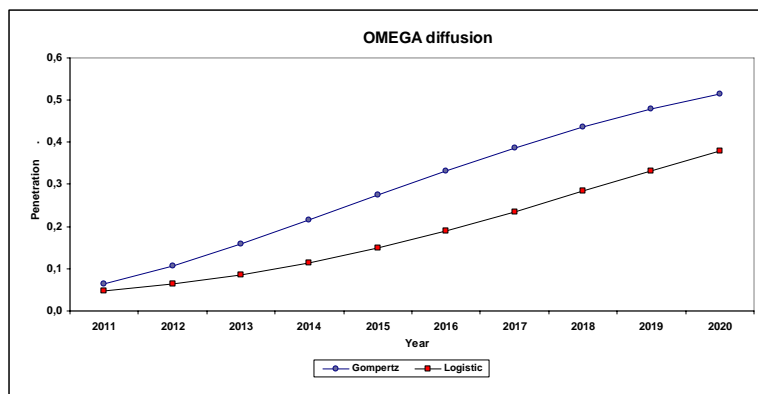
Forecasting OMEGA HG and Extender

- Dataset: Per country penetration of similar devices (Eurostat)
- Fitted two models
 - Gompertz (optimistic)
 - Logistic (pesimistic)
 - Data from 2002 to 2008
- Result parameters
 - Saturation level
 - Diffusion speed
- Forecast from 2008 to 2018

Device Code	Device	Description
<i>h_itv</i>	TV	The device for Internet access at home is a TV set (digital TV or set top box)
<i>h_ipc</i>	PC	The device for Internet access at home is a personal computer
<i>h_ipalm</i>	Palmtop	The device for Internet access at home is a handheld computer
<i>h_iport</i>	Notebook/Netbook	The device for Internet access at home is a portable computer
<i>h_imph</i>	Mobile Phone	The device for Internet access at home is a mobile phone alone (WAP, GPRS, UMTS)
<i>h_imb</i>	Other mobile device	The device for Internet access at home is a mobile device
<i>h_igame</i>	Game console	The device for Internet access at home is a games console



Demand forecast (Omega countries average)





Price Forecasting

- Extended learning curves model with the following parameters

$$P(t) = P(0) \cdot \left[n_r(0)^{-1} \cdot \left(1 + e^{\left\{ \ln \left[n_r(0)^{-1} - 1 \right] - \left[\frac{2 \cdot \ln 9}{\Delta T} \right] \cdot t \right\}} \right)^{-1} \right]^{\log_2 \cdot K}$$

$Year_0 \equiv$ Reference year

$P(Year_0) \equiv$ Initial production cost per unit at ref. year

$n_r(Year_0) \equiv$ Initial relative production volume at ref. year

$\Delta T \equiv$ Growth Period (10% - 90% volume)

$K \equiv$ Price reduction factor



Price forecasting

- Particularization to OMEGA Home Gateway and Extender
- Uses data from demand forecasting

$Year_0 \equiv$ 2011

$P(Year_0) \equiv$ 100€(HG) and 50€(Extender)

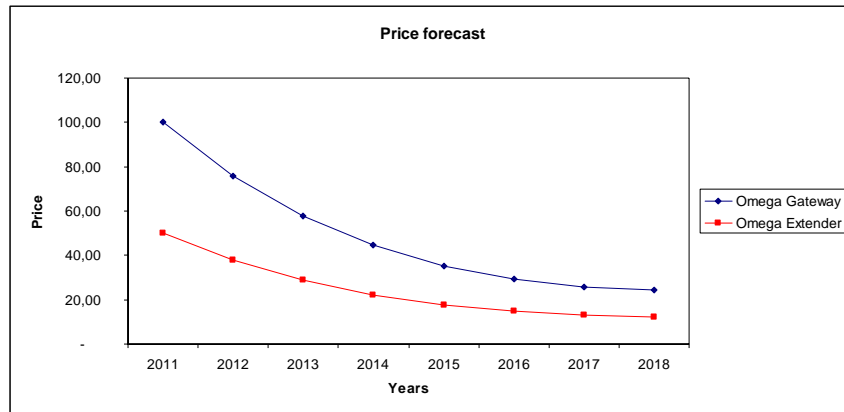
$K \equiv$ 0.70 (typical for sector)

$n_r(Year_0) \cong \frac{HG \text{ Penetration level}(Year_0)}{HG \text{ Penetration level}(y = \text{saturation})}$ per country

$\Delta T \cong$ Years for demand saturation per country



Omega GW and Extender price forecast (Omega countries average)



Study Data – Assumptions(1)

- Study period

Parameter	Value
Duration	8 years
Start Year	2011
End Year	2018

- Financial assumptions

Parameter	Value
Discount Factor	10%
Income Taxes	30%



Study Data - Assumptions(2)

- Geographical data (source: Eurostat)

Country	Total Population in 2011	Number of households in 2011	OMEGA diffusion in 2011	OMEGA diffusion in 2018	Average number of rooms per household
Austria	8.404.899	3.536.000	10,21%	46,92%	2,945
France	62.582.650	26.734.000	6,63%	41,07%	3,015
Germany	82.144.902	39.291.000	9,53%	39,78%	2,897
Greece	11.306.765	4.221.000	2,07%	25,26%	3,148
Italy	60.017.346	23.902.000	5,99%	40,14%	3,106
Slovenia	2.034.220	745.000	6,47%	35,01%	3,156
Spain	46.673.372	16.226	2,22%	21,01%	3,162
UK	61.983.950	26.649.000	6,08%	41,19%	3,028
Average	41.893.513	15.636.778	6,52%	43,54%	3,057



Study Data - Assumptions(3)

- Demand data.
- OMEGA operator is assumed to possess a market share of 33% of the estimated demand.

Parameter	Value
Initial OMEGA demand in 2011	6,52%
Initial market share in 2011 (Omega op.)	2,15%
Number of OMEGA Gateways in 2011	337.718
Number of OMEGA Extenders in 2011	1.032.447
OMEGA demand in 2018	43,54%
Market share in 2018	14,37%
Number of OMEGA Gateways in 2018	2.319.724
Number of OMEGA Extenders in 2018	7.091.685



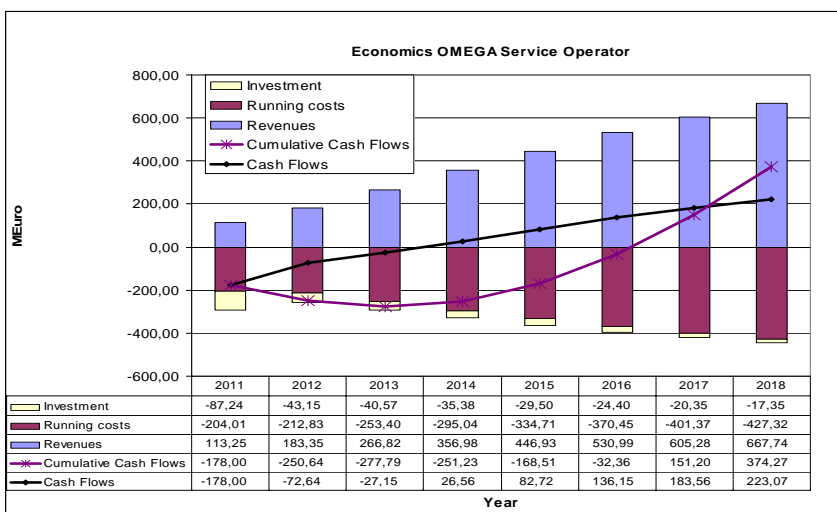
Study Data – Assumptions(4)

- OMEGA service packets

	Services included						Additional services / price
	VoIP	Videophony	Broadband access	Digital TV	Digital channels TV	Video Demand on	
OMEGA Bronze	X		X			X	Price: 18€ / month
OMEGA Silver	X		X	X		X	New OMEGA services Price: 25€ / month
OMEGA Gold	X	X	X	X	X	X	New OMEGA services Price: 35€ / month
OMEGA Platinum	X	X	X	X	X	X	New OMEGA services Additional free 5 more TV channels and 10 movies per month Price: 45€ / month

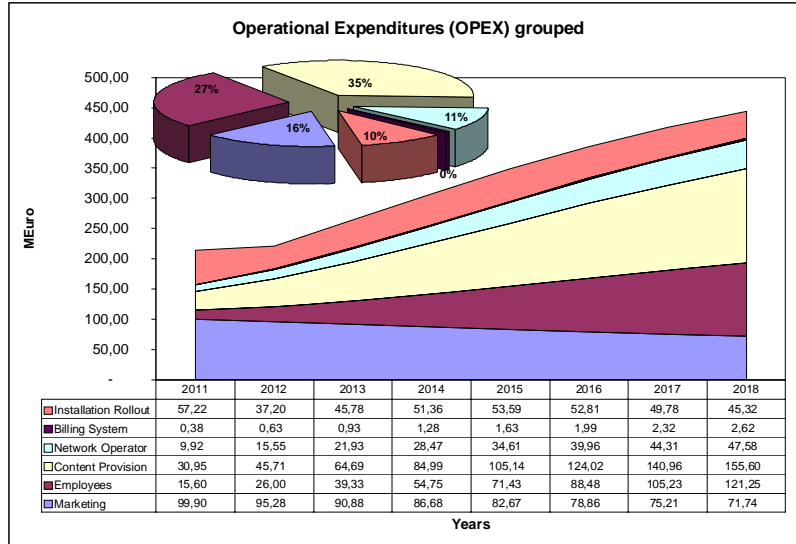


Financial results- Average Country





Opex

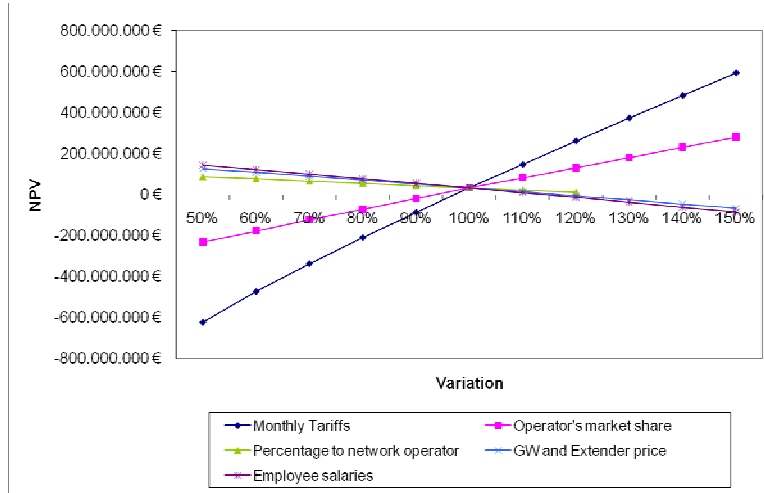


Financial Indexes

NPV	34.495.144
IRR	12,56%
PayBackPeriod	6,69
RestValue	47.583.333
NPVBeforeTaxes	134.801.941
IRRBeforeTaxes	18,9%
Maximum Finance needed	277.787.494



Sensitivity Analysis



Time for Questions & Answers



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